TECHNICAL REVIEW DOCUMENT For OPERATING PERMIT 040PGA277

Grand River Gathering, LLC Pumba Compressor Station Garfield County Source ID 045/0368

July – November 2012

Modified December 2012 to address additional changes requested by Grand River Gathering Updated January 2013 to address final signing of amendments to Boiler and Engine Rules

Operating Permit Engineer:

Operating Permit Supervisor review:

Field Services Unit review:

Blue Parish

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I. Purpose

This document establishes the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the Operating Permit for the Pumba Compressor Station.

This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the original application submitted on October 6, 2004, additional information received on February 20, 2009, May 20, 2009, April 6, 2009, August 9, 2009, October 14, 2009, December 2, 2009, April 26, 2010, March 22, 2011, August 17, 2012, November 16, 2012, December 6, 2012, comments on the draft permit submitted on November 28, 2012, previous inspection reports and various e-mail correspondence and telephone conversations with the applicant and review of Division Files. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.colorado.gov/cs/Satellite/CDPHE-AP/CBON/1251596446069. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

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II. Description of Source

The Pumba Compressor Station is a natural gas gathering and compression facility defined under Standard Industrial Classification 1311. The facility includes four gas compressors powered by internal combustion engines, a triethylene glycol dehydrator used to remove water from the natural gas and six atmospheric condensate storage tanks. Emissions from the internal combustion engines are controlled with oxidation catalysts. Emissions from the dehydrator still vent are routed to an air-cooled condenser and then to a Vapor Recovery Unit (VRU). Emissions from the dehydrator flash tank and from the condensate tank vents are also routed to the VRU. The facility has one blowdown stack which accepts natural gas from compressor and pipeline blowdown activities on site.

The facility is located approximately 4.5 miles south of Rifle in Garfield County, Colorado. The area in which the facility operates is designated as attainment for all criteria pollutants.

There are no affected states within 50 miles of the facility. The following are Federal Class I designated areas within 100 kilometers of the facility: Flat Tops Wilderness, Maroon-Bells-Snowmass Wilderness, West Elk Wilderness and Black Canyon of the Gunnison National Park.

Based on the information provided by the applicant, this source is categorized as a minor stationary source for PSD as of the issue date of this permit. Any future modification which is major by itself (Potential to Emit of ≥ 250 TPY) for any pollutant listed in Regulation No. 3, Part D, Section II.A.42 for which the area is in attainment or attainment/maintenance may result in the application of the PSD review requirements.

Emissions (in tons/yr) at the facility are as follows:

Pollutant	Potential to Emit (tpy)	Actual Emissions (tpy)
NOx	127.3	98.4
VOC	181.7 (point sources)	122.8
	14.2 (fugitives)	
CO	138.5	140.5*
Highest HAP	14.5	14.4
Formaledehdye		
Total HAPs	38.3	20.3

Potential to Emit is based on permitted emission levels for criteria pollutants. Actual emissions are from the APENs submitted in November 2011 and August 17, 2012. Emission details are included in Section IX at the end of this document. *Potential to emit values shown above include controls. Actual emissions reported on APENs in 2011 did not include CO reductions from controls on engines, resulting in a higher reported CO value.

The construction permits originally associated with this facility were issued to EnCana Oil & Gas (USA), Inc, and EnCana submitted the original Title V Operating Permit

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application received October 6, 2004 and various supplemental information received through March of 2011. On November 14, 2011, the Division received a notification that a transfer of ownership to Grand River Gathering, LLC occurred on October 27, 2011. With respect to the information reviewed during the drafting of this operating permit, information submitted prior to the transfer of ownership date was submitted by EnCana.

III. Applicable Requirements

<u>Accidental Release Program – 112(r)</u>

Section 112(r) of the Clean Air Act mandates a new federal focus on the prevention of chemical accidents. Sources subject to these provisions must develop and implement risk management programs that include hazard assessment, a prevention program, and an emergency response program. They must prepare and implement a Risk Management Plan (RMP) as specified in the Rule.

Based on the information provided by the applicant, this facility is not subject to the provisions of the Accidental Release Prevention Program (Section 112(r) of the Federal Clean Air Act).

Compliance Assurance Monitoring (CAM)

The following emission points at this facility use a control device to achieve compliance with an emission limitation or standard to which they are subject and have pre-control emissions that exceed or are equivalent to the major source threshold. They are therefore subject to the provisions of the CAM program as set forth in 40 CFR Part 64 as adopted by reference into Colorado Regulation No. 3, Part C, Section XIV:

Engines CE-01, CE-03 and CE-04 have pre-control emissions of CO that exceed major source thresholds. The engines are not large pollutant specific emission units (i.e. potential controlled emissions, including limits, are less than major source thresholds), therefore the applicant is not required to submit a CAM plan until the permit is renewed (if applicable).

DU-02: The facility routes post-condenser still vent emissions and flash tank emissions from dehydrator DU02 to a Vapor Recovery Unit (VRU). Uncontrolled emissions from DU02 are above major source thresholds for VOC and HAPs, and the facility is subject to an annual VOC emission limit for the dehydrator and annual HAP emission limits from the dehydrator and condensate tanks combined. VRUs are capable of removing all VOCs and HAPs that are captured and directed to them when they are operating, but may allow emissions to occur when they experience downtime. The dehydrator and condensate tanks are permitted with limits assuming that the VRU experiences 5% downtime on an annual basis.

CAM requirements are intended "to establish monitoring for the purpose of: (1) Documenting continued operation of the control measures within ranges of specified indicators of performance (such as emissions, control device parameters and process parameters) that are designed to provide a reasonable assurance of compliance with

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applicable requirements; (2) indicating any excursions from these ranges; and (3) responding to the data so that excursions are corrected." VRUs are different than other typical control devices in that they do not have indicators of performance that can be identified and monitored. There are no parameters with identifiable setpoints or operational ranges that indicate proper performance. The unit is either in operation (and thus removing all VOC and HAP emissions directed to it), or it is not in operation due to maintenance, malfunction, etc. Emissions only occur during periods of VRU non-operation, and are calculated accordingly so that compliance with the annual VOC and HAP emission limits is adequately determined. Therefore, no CAM requirements for monitoring indicators and identification of excursions will be included.

TK01-TK06: Uncontrolled emissions of VOC from Tanks TK01-TK06 are above the major source threshold for VOC, and the facility is subject to an annual VOC emission limit for the tanks. Tank emissions are routed to the same VRU that controls the dehydrator. **UPDATE:** On November 28, 2012, Grand River Gathering submitted new information for the tanks showing uncontrolled emissions of VOC to be 89.5 tons per; based on thus new value the tank battery is not subject to CAM.

Hazardous Air Pollutants (HAPs)

Controlled emissions of formaldehyde exceed 10 tpy and total controlled HAP emissions exceed 25 tpy; this facility is a major source of HAP with respect to Title V Operating Permit thresholds. The facility is also subject to the major source HAP requirements for engines of 40 CFR 63 Subpart ZZZZ.

Pumba Compressor Station is an area source of HAP emissions with respect to 40 CFR 63 Subpart HH (see discussions below for further details).

Greenhouse Gases

The potential-to-emit of greenhouse gas (GHG) emissions from this facility is less than 100,000 TPY CO2e. Future modifications greater than 100,000 TPY CO2e may be subject to regulation (Regulation No. 3, Part A, I.B.44).

Colorado Regulation No. 7, Section XVII Requirements for Dehydrators

Section XVII.D requires that dehydrators with uncontrolled actual emissions greater than 15 tons per year (on a rolling 12-month total) control emissions from process vents by an average of at least 90%, beginning May 1, 2008. Based on permitted throughputs, uncontrolled VOC emissions from the DU02 (based on GRI GlyCalc estimates) are greater than 15 tpy and Section XVII.D applies.

Colorado Regulation No. 7, Section XVII Requirements for Condensate Tanks

Section XVII.C requires that atmospheric condensate storage tanks with uncontrolled actual emissions of VOC equal to or greater than 20 ton per year (on a rolling 12-month total) operate with air pollution control equipment that has an average control efficiency of at least 95%. Based on permitted throughputs, uncontrolled VOC emissions from the group of all six tanks (based on E&P Tanks estimates) are greater than 20 tpy and Section XVII.C applies.

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<u>40 CFR 63 Subpart HH – National Emission Standards for Hazardous Air Pollutants</u> <u>From Oil and Natural Gas Production Facilities</u>

This section addresses the final version of Subpart HH published in the Federal Register on August 16, 2012.

Major source status for MACT HH purposes is determined for production field facilities based *only* on HAP emissions from glycol dehydration units and storage vessels; HAP emissions from engines are not included (reference 63.760(b)(1) and the definition of major source in 63.761). HAP emissions from the dehydrator (DU02) and the condensate tanks (TK01-06) have been limited below major source thresholds by permits that were issued prior to startup (Colorado Construction Permits 03GA0608, and Colorado Construction Permit 02GA0237, which was cancelled by the original issuance of 03GA0608). The facility also includes a 210 bbl produced water tank which is an insignificant activity with emissions below APEN-reportable thresholds; the consideration of these insignificant emissions does not increase storage tank and dehy total emissions above major source thresholds. Therefore, the facility is not subject to major source Subpart HH requirements.

Subpart HH also includes requirements for TEG dehydrators at area sources of HAP, which are applicable to DU02. Based on the information provided in the MACT HH Initial Notification submitted by EnCana to the Division on January 7, 2009, the facility is not located in an Urban 1 County, nor in a UA plus offset and UC boundary, as defined in Subpart HH. Annual throughput for this unit is permitted greater than 3.0 MMscfd, and annual benzene emissions are permitted higher than 0.9 megagrams per year. Therefore, the facility is subject to the optimal glycol recirculation rate requirements of Subpart HH, and the compliance date is January 5, 2009 based on construction commencement prior to July 8, 2005 (startup of the unit was in October 2003).

<u>40 CFR 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines</u>

Subpart JJJJ applies to owners and operators of stationary spark ignition ICE that commenced construction after June 12, 2006. According to the information in the Operating Permit application, CE01 and CE02 were first placed in service in 2002, and CE03 and CE 04 were first placed in service in 2003. Therefore, none of the engines at the facility are subject to Subpart JJJJ. **UPDATE:** EPA signed a final rule amending Subpart JJJJ on January 14, 2013. The final rule did not change §60.4230(a)(4), which sets the applicability based on a commence construction date of June 12, 2006.

<u>40 CFR 63 Subpart ZZZZ – National Emissions Standards for Hazardous Air</u> <u>Pollutants for Stationary Reciprocating Internal Combustion Engines</u>

The facility is subject to the major source requirements of Subpart ZZZZ, and the four compressor engines (CE-01, CE-02, CE-03 and CE-4) are affected units under the rule.

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CE-01 & CE-02: According to information in the Operating Permit application, engines CE01 and CE02 began operation in December, 2002. The applicant confirmed via telephone conversation that the engines commenced construction prior to December 19, 2002. CE-01 and CE-02 are therefore existing units with respect to Subpart ZZZZ (greater than 500 horsepower and commenced construction prior to December 19, 2002). Existing four stroke lean-burn RICE located at major HAP sources are not subject to any of the requirements of Subpart ZZZZ at this time, including the initial notification requirements (§63.6590(b)(3)).

CE-03 & CE-04: Since these units were first placed in service in October, 2003 (according to the Operating Permit application), they are categorized as new four stroke lean burn engines under the RICE MACT, and are therefore subject to the emissions and operating limitations in Tables 2a and 2b of the rule. The initial notification of compliance status for these two engines was submitted on March 21, 2005.

UPDATE: EPA signed a final rule amending Subpart ZZZZ on January 14, 2013. The rule was changed to address emergency engines, engines less than 500 hp at major sources and engines at area sources. None of the engines fall into these categories, so the rule amendments do not affect applicability or requirements.

Colorado Regulation No. 7, Section XVII Requirements for Engines

Section XVII.B.4 states that "Condensate tanks, dehydrators and internal combustion engines that are subject to an emissions control requirement in a federal maximum achievable control technology ("MACT") standard under 40 CFR Part 63, a Best Available Control Technology ("BACT") limit, or a New Source Performance Standard under 40 CFR Part 60 are not subject to this Section XVII." Therefore, engines CE-03 and CE-04 are exempt from the Regulation No. 7 requirements because they are subject to CO reduction standards under Subpart ZZZZ.

Section XVII.E.2 applies to new, modified and relocated engines. Note that the applicability date for Reg 7 is the date the engine was first constructed in Colorado. Section XVII.E.2 includes emission standards for engines greater than 500 horsepower constructed or relocated on or after July 1, 2007. The engines have been in operation at the facility since 2002 (CE-01/CE-02) and 2003 (CE-03/CE-04); therefore these standards are not applicable.

Section XVII.E.3 applies to existing engines (constructed before February 9, 2009) and requires that lean burn RICE with manufacturer's nameplate design rate greater than 500 horsepower install and operate an oxidation catalyst by July 1, 2010. The engines subject to this requirement (CE-01 and CE-02) are currently operating with oxidation catalysts. Good engineering practices and operation according to manufacturer's specifications are also required for these two engines as per Section XVII.B.1.a.

40 CFR Part 63 Subparts DDDDD and JJJJJJ – the Boiler MACTs

Subpart DDDDD applies to industrial, commercial or institutional boilers and process heaters at major sources of HAP. EPA published Subpart DDDDD as a final rule on

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March 21, 2011 (76 FR 15608). On the same day, EPA also published a proposed notice of reconsideration of Subpart DDDDD (76 FR 15249). On May 18, 2011, EPA delayed the effective dates for the March 21, 2011 version of Subpart DDDDD "until the proceedings for judicial review of these rules are completed or the EPA completes its reconsideration of the rules, whichever is earlier" (76 FR 28662). The reconsideration of the rule was then published on December 23, 2011 as a new proposed rule (76 FR 80598). However, on January 9, 2012, the U.S. District Court for the DC circuit vacated the delay of the effective dates of the March 2011 rule.

The March 2011 version of the rule required sources that started up before May 20, 2011 to submit an initial notification by September 17, 2011. Since the delay was published before this date, many sources did not submit initial notifications. The vacatur of that delay did not occur until after the date on which the original initial notification was due. Therefore, sources that had originally relied on the delay found themselves out of compliance with the September 17, 2011 deadline as soon as the vacatur took place on January 9, 2012. To address this situation, EPA issued a No Action Assurance (NAA) letter on February 7, 2012, which provided assurance that no action would be taken for failure to submit an initial notification by the date required. This no action assurance will be in effect until December 31, 2012 or until the effective date of the final rule addressing the proposed reconsideration Subpart DDDDD. EPA has stated in this letter that they intend to finalize the reconsideration in the spring of 2012.

According to § 63.7485, Subpart DDDDD is applicable to boilers and process heaters at major sources of HAP, and the definition of a "major source" for oil and natural gas production facilities is as defined in § 63.761. This means that, for production field facilities like the Pumba Compressor Station, only HAPs associated with storage vessels and gas dehydration units should be considered when determining major source status (see the previous discussion for Subpart HH above). Since the Pumba Compressor Station is not a major source of HAP under Subpart HH, it is also not a major source of HAP under Subpart DDDDD. Note that this language in § 63.7485 exists in both the December 2011 and March 2011 versions of the rule. **UPDATE**: EPA signed the final rule again on December 20, 2012. The final rule still includes the special definition of a major source for oil and natural gas production facilities; however, instead of referencing that definition in § 63.761, the boiler MACT now contains that same definition within itself in § 63.7575. No changes in applicability result from the changes to the final rule.

Subpart JJJJJJ applies to industrial, commercial or institutional boilers at area sources of HAP. § 63.11193 does not include the deferral to Subpart HH in order to determine major source status like that described for § 63.7485 to Subpart DDDDD above. Instead, Subpart JJJJJJ uses the major source definition from § 63.2 which, when applied to the Pumba Compressor Station, includes emissions from engines as well as the tanks and dehydrators. Based on this definition, the facility is a major source of HAP with respect to Subpart JJJJJJ (emission calculation details in Section IX at the end of this document) and Subpart JJJJJJ is not applicable. Note that this language in § 63.11193 exists in both the December 2011 and March 2011 versions of the rule (final and proposed reconsiderations). **UPDATE:** EPA signed the final rule again on

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December 20, 2012. None of the changes in the final rule change the applicability determinations described.

40 CFR Part 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

As per § 60.110b(d)(4), Subpart Kb does not apply to vessels with a design capacity less than or equal to 1,589.874 m³ (approximately 10,000 bbl) used for petroleum or condensate stored, processed, or treated prior to custody transfer. The tanks at Pumba are 300 and 500 bbl each.

40 CFR Part 50 Subpart KKK - Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants

Subpart KKK does not apply to the Pumba Compressor Station because it is not a natural gas processing plant.

<u>40 CFR Part 63 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution</u>

At production field facilities, Subpart OOOO applies to reciprocating and centrifugal compressors, pneumatic controllers and storage vessels that were constructed, modified or reconstructed after August 23, 2011. All of the compressors and condensate tanks TK-01, TK-02, TK-03 and TK-04 at Pumba Compressor Station were constructed prior to this date.

TK-05 and TK-06 will be constructed after August 23, 2011, and were originally permitted under Colorado Construction Permit 03GA0608 which included a VOC limit on the entire tank battery of 9.7 tons per year. Subpart OOOO requirements for storage vessels apply to tanks or tank batteries with emissions greater than or equal to 6 tpy VOC. The requirements under Subpart OOOO for affected storage vessels apply beginning October 15, 2013. On November 28, 2012, Grand River Gathering submitted a request that the emission limit for the tank battery be revised to 4.5 tons per year; this new limit is being incorporated as a modification under this initial Operating Permit Issuance. Because the new limit will be in effect prior to October 15, 2013, Subpart OOOO will not apply to tanks TK-05 and TK-06.

The Pumba Compressor Station uses instrument air instead of natural gas-driven pneumatic controllers, so the Subpart OOOO requirements for pneumatic controllers do not apply.

Source Determination

With this permit action, the Division revisited the source determination in regards to the natural gas operations in the area surrounding the Pumba facility to verify that the proper pollutant emitting activities are included in this permit as part of the Pumba Compressor Station. The applicant did not identify any other pollutant emitting activities in the vicinity of the Pumba Compressor Station that are dependent upon the Pumba Compressor Station to maintain operations. The Division considers the

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current determination for this facility to be accurate, and the proper pollutant emitting activities are included in this permit.

IV. Emission Sources

A. <u>CE-02:</u> One (1) Caterpillar G3608 TALE four cycle Low-NOx designed natural gas-fired internal reciprocating combustion engine, site-rated at 2,225 horsepower and equipped with an oxidation catalyst. Serial Number 4WF00222. AIRS Point ID 001.

1. Applicable Requirements

This engine was issued Construction Permit 02GA0236 as Initial Approval on September 25, 2002, and a Final Approval was issued on January 12, 2006. A modification (Final Approval) was issued on July 31, 2009 to incorporate the Division's standard Alternative Operating Scenario (AOS) for engines and to correct the serial number. Grand River Gathering submitted a site specific technical data sheet for this engine on December 6, 2012 which establishes the appropriate emission factors, site-rated horsepower and fuel consumption factor for this engine. The Division is modifying the underlying construction permit in order to incorporate the site specific technical data sheet information. This modification is accomplished in accordance with the provisions of Regulation No. 3, Part C, Section III.B.7. The following applicable requirements from the Construction Permit have been incorporated into the Operating Permit:

 Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. EPA Method 9 shall be used to measure opacity. (Reference: Regulation 1, Section II.A.1. & 4.)

Compliance with the opacity standards can be presumed since only natural gas is permitted to be used as fuel in this engine. Therefore, the Method 9 language has been replaced with the permitted fuel use language. The condition has been modified slightly to list all of the operating scenarios applicable to the Section II.A.4 30% standard.

 NO_x emissions shall not exceed 15.0 tons per year. VOC emissions shall not exceed 17.2 tons per year. CO emissions shall not exceed 21.5 tons per year.

Emissions are being updated based on the site specific technical data sheet for this engine on December 6, 2012 as follows: $NO_x - 16.9$ tpy; CO -24.1tpy; VOC -19.3 tpy

Natural gas consumption as a fuel shall not exceed 125 MMscf/year.

The fuel use limit is being updated to 125.4 MMscf/year based on a request submitted November 28, 2012.

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 The applicant shall follow the most current operating and maintenance plan and recordkeeping format approved by the Division in order to monitor compliance.

The operating permit includes appropriate periodic monitoring/maintenance to monitor compliance with the emission limitations and other requirements.

 Operating permit requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit limitation.

Because the source is no longer a synthetic minor facility with respect to Title V, this condition is not included in the Operating Permit.

 Requirements to file revised APENs in accordance with Regulation No. 3 Requirements.

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

 The construction permit includes the December 10, 2008 version of the AOS for temporary and permanent engine replacement. The Division's most current AOS is incorporated in the Operating Permit under Section I.

Other requirements applicable to this engine not included in Construction Permit 02GA0236:

 Regulation No. 7, Section XVII.E.3.b.(i) – install and operate an oxidation catalyst by July 2, 2010.

This engine is currently operated with an oxidation catalyst.

 Regulation No. 7, Section XVII.B.1.a – operate and maintain air pollution control equipment in accordance with good engineering practices and manufacturer's specifications.

2. Emission Factors

Emissions from the engine are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC). Smaller quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency.

Emission limits from the current construction permit have been incorporated into the Operating permit. These limits are based on manufacturer's engine emission data and catalyst control efficiencies. The Construction Permit emission factors are in units of g/hp-hr; these emission factors have been converted to lb/MMBtu

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in the Operating Permit in accordance with Division policy. The conversion is based on a BSCF for the engine of 6832 Btu/hp-hr, as listed in the site-specific tech sheet for this engine submitted on December 6, 2012. The emission factors have been converted to an HHV basis, using a the following HHV:LHV ratio: 1125/1062.

The construction permit for this engine never required stack testing; the Operating Permit will require quarterly portable monitoring to confirm that engine emissions are in compliance with permitted limits.

Pollutant	Construction Permit Emission Factor (g/hp-hr, as listed in the notes to permit holder)	Construction Permit Emission Factor (converted to lb/MMBtu)
NOx	0.7	0.2393
VOC	0.8	0.2735
СО	1.0	0.3418

3. Monitoring Plan

To ensure proper operation of the control equipment, catalyst inlet temperature shall be monitored daily and catalyst differential pressure shall be monitored monthly. Quarterly portable NO_x and CO monitoring is also required.

Since the emission factors for these engines have been converted to units of lbs/MMBtu, semi-annual sampling and analysis of the natural gas burned shall be required to determine the heat content of the gas. Note that since the emission factors have been converted to an HHV basis, the permit will require the higher value heat content of the fuel to be determined. Also, the Division presumes the engine is in compliance with the opacity requirements, in the absence of credible evidence to the contrary, since only natural gas is used as fuel.

4. Compliance Status

The applicant certified compliance with all applicable requirements in the operating permit application. The Division completed a full compliance evaluation at the facility on November 15, 2010. According to the inspection report, the engine was in compliance with Construction Permit No 02GA0236 and applicable air pollution control regulations.

B. <u>CE-01:</u> One (1) Caterpillar G3516 TALE four cycle Low-NOx designed natural gas-fired internal reciprocating combustion engine, site rated at 4,521 horsepower and equipped with an oxidation catalyst. Serial Number BLB00177. AIRS Point ID 002.

1. Applicable Requirements

This engine was issued Construction Permit 02GA0557 as Initial Approval on November 18, 2002, and a Final Approval was issued on February 8, 2006. A

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modification (Final Approval) was issued on July 31, 2009 to incorporate the Division's standard Alternative Operating Scenario (AOS) for engines and to correct a typo in the serial number. Grand River Gathering submitted a site specific technical data sheet for this engine on December 6, 2012 which establishes the appropriate emission factors, site-rated horsepower and fuel consumption factor for this engine. The Division is modifying the underlying construction permit in order to incorporate the site specific technical data sheet information. This modification is accomplished in accordance with the provisions of Regulation No. 3, Part C, Section III.B.7. The following applicable requirements from the Construction Permit have been incorporated into the Operating Permit:

- Note that this engine was originally permitted at 4,705 hp. Based on the site-specific technical data sheet submitted on December 6, 2012, the engine is site-rated at 4,521 hp. The operating permit will be updated accordingly.
- Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. EPA Method 9 shall be used to measure opacity. (Reference: Regulation 1, Section II.A.1. & 4.)
 - Compliance with the opacity standards can be presumed since only natural gas is permitted to be used as fuel in this engine. Therefore, the Method 9 language has been replaced with the permitted fuel use language. The condition has been modified slightly to list all of the operating scenarios applicable to the Section II.A.4 30% standard.
- NO_x emissions shall not exceed 31.8 tons per year. VOC emissions shall not exceed 36.4 tons per year. CO emissions shall not exceed 45.4 tons per year.
 - Emissions are being updated based on the site specific technical data sheet for this engine on December 6, 2012 as follows: NO_x 36.8 tpy; CO 52.6 tpy; VOC 42.1 tpy
- Natural gas consumption as a fuel shall not exceed 310 MMscf/year.
 - The fuel use limit is being updated to 271.7 MMscf/year based on a request submitted November 28, 2012.
- The applicant shall follow the most current operating and maintenance plan and recordkeeping format approved by the Division in order to demonstrate compliance

The operating permit includes appropriate periodic monitoring/maintenance to monitor compliance with the emission limitations and other requirements.

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 Operating permit requirements, MACT 112(g) and 112(j) shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit limitation.

Because the source is no longer a synthetic minor facility with respect to Title V, and because MACT standards for engines have been promulgated and apply to this facility, this condition is not included in the Operating Permit.

 Requirements to file revised APENs in accordance with Regulation No. 3 Requirements.

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

 The construction permit includes the December 10, 2008 version of the AOS for temporary and permanent engine replacement. The Division's most current AOS is incorporated in the Operating Permit under Section I.

Other requirements applicable to this engine not included in Construction Permit 02GA0557:

 Regulation No. 7, Section XVII.E.3.b.(i) – install and operate an oxidation catalyst by July 2, 2010.

This engine is currently operated with an oxidation catalyst.

2. Emission Factors

Emissions from the engine are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC). Smaller quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency.

Emission limits from the current construction permit have been incorporated into the Operating permit. These limits are based on manufacturer's engine emission data and catalyst control efficiencies. The Construction Permit emission factors are in units of g/hp-hr; these emission factors have been converted to lb/MMBtu in the Operating Permit in accordance with Division policy. The conversion is based on a BSCF for the engine of 6,789 Btu/hp-hr, as listed in site-specific technical data sheet submitted on December 6, 2012. The emission factors have been converted to an HHV basis, using a the following HHV:LHV ratio: 1125/1062.

The construction permit for this engine never required stack testing; the Operating Permit will require quarterly portable monitoring to confirm that engine emissions are in compliance with permitted limits.

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Pollutant	Construction Permit Emission Factor (g/hp-hr, as listed in the notes to permit holder)	Construction Permit Emission Factor (lb/MMBtu)
NOx	0.7	0.2408
VOC	0.8	0.2752
СО	1.0	0.3440

3. Monitoring Plan

To ensure proper operation of the control equipment, catalyst inlet temperature shall be monitored daily and catalyst differential pressure shall be monitored monthly. Quarterly portable NO_x and CO monitoring is also required.

Since the emission factors for these engines have been converted to units of lbs/MMBtu, semi-annual sampling and analysis of the natural gas burned shall be required to determine the heat content of the gas. Note that since the emission factors have been converted to an HHV basis, the permit will require the higher value heat content of the fuel to be determined. Also, the Division presumes the engine is in compliance with the opacity requirements, in the absence of credible evidence to the contrary, since only natural gas is used as fuel.

4. Compliance Status

The applicant certified compliance with all applicable requirements in the operating permit application. The Division completed a full compliance evaluation at the facility on November 15, 2010. According to the inspection report, the engine was in compliance with Construction Permit No 02GA0557 and applicable air pollution control regulations.

C. <u>CE-03 & CE0-4</u>: Two (2) Caterpillar G3516 TALE four cycle Low-NOx designed natural gas-fired internal reciprocating combustion engines, rated at 4,705 horsepower each and equipped with oxidation catalysts. Serial Numbers BLB00202 (CE-03) and BLB00204 (CE-04). AIRS Point IDs 003 (CE-03) and 004 (CE-04).

1. Applicable Requirements

CE-03 was issued Construction Permit 03GA0341 as Initial Approval on September 8, 2003, and a Final Approval was issued on February 16, 2006. A modification (Final Approval) was issued on June 19, 2009 to correct the benzene emissions listed in the notes to permit holder section and to add 1,3-butadiene emissions and emission factors. Another modification (Final Approval) was issued on July 31, 2009 to include the Division's standard Alternative Operating Scenario (AOS).

CE-04 was issued Construction Permit 03GA0342 as Initial Approval on September 8, 2003, and a Final Approval was issued on February 8, 2006. A

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modification (Final Approval) was issued on June 19, 2009 to correct the benzene emissions listed in the notes to permit holder section and to add 1,3-butadiene emissions and emission factors. Another modification (Final Approval) was issued on July 31, 2009 to include the Division's standard Alternative Operating Scenario (AOS).

Grand River Gathering submitted a site specific technical data sheet for thes engines on December 6, 2012 which establishes the appropriate emission factors, site-rated horsepower and fuel consumption factor for these engines. The Division is modifying the underlying construction permit in order to incorporate the site specific technical data sheet information. This modification is accomplished in accordance with the provisions of Regulation No. 3, Part C, Section III.B.7. The following applicable requirements from the Construction Permits have been incorporated into the Operating Permit:

- Note that these engines were originally permitted at 4,705 hp each.
 Based on the site-specific technical data sheet submitted on December 6, 2012, the engines are site-rated at 4,521 hp each. The operating permit will be updated accordingly.
- Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. EPA Method 9 shall be used to measure opacity. (Reference: Regulation 1, Section II.A.1. & 4.)

Compliance with the opacity standards can be presumed since only natural gas is permitted to be used as fuel in this engine. Therefore, the Method 9 language has been replaced with the permitted fuel use language. The condition has been modified slightly to list all of the operating scenarios applicable to the Section II.A.4 30% standard.

 NOx emissions shall not exceed 31.8 tons per year. VOC emissions shall not exceed 36.4 tons per year. CO emissions shall not exceed 45.4 tons per year.

Emissions are being updated based on the site specific technical data sheet for this engine on December 6, 2012 as follows: $NO_x - 36.8$ tpy; VOC - 42.1 tpy

Note that emissions limits are for each engine. The construction permits do not incorporate the 93% reduction requirement from the RICE MACT. Therefore, the Operating Permit will include a CO limit of 9.2 tons per year from each engine (93% control on emissions of 131.4 tons per year).

Natural gas consumption as a fuel shall not exceed 310 MMscf/year.

The fuel use limit is being updated to 271.7 MMscf/year based on a request submitted November 28, 2012.

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 The applicant shall follow the most current operating and maintenance plan and recordkeeping format approved by the Division in order to demonstrate compliance

The operating permit includes appropriate periodic monitoring/maintenance to insure compliance with the emission limitations and other requirements.

 This source is subject to the requirements of 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

The Operating Permit will incorporate the specific applicable provisions of the RICE MACT.

The source submitted an Initial notification for Subpart ZZZZ for engines CE-03 and CE-04 (received by the Division on December 10, 2004). The source submitted a Notification of Compliance Status (NOCS) for these two engines on March 21, 2005. Based on these submittals and subsequent semiannual reports, the Division will include the CO reduction requirements as the compliance option in the operating permit condition (the formaldehyde concentration limit will not be included). The Division will not include initial testing and notification requirements from Subpart ZZZZ as these have already been completed.

Subsequent performance tests are required under Subpart ZZZZ on a semi-annual basis. Once a source demonstrates compliance with two consecutive semi-annual tests, annual tests are required unless compliance cannot be demonstrated, at which point the frequency reverts to semi-annual. However, the Division requires quarterly portable analyzer monitoring for engines with catalysts at Title V facilities.

 Requirements to file revised APENs in accordance with Regulation No. 3 Requirements

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

 The construction permit includes the December 10, 2008 version of the AOS for temporary and permanent engine replacement. The Division's most current AOS is incorporated in the Operating Permit under Section I.

2. Emission Factors

Emissions from the engine are produced during the combustion process, and are dependent upon operating conditions and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC). Smaller quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency.

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Emission limits from the current construction permit have been incorporated into the Operating Permit (except that the CO limit has been modified to incorporate the RICE MACT limits). These limits are based on manufacturer's engine emission data and catalyst control efficiencies. The Construction Permit emission factors are in units of g/hp-hr; these emission factors have been converted to lb/MMBtu in the Operating Permit in accordance with Division policy. The conversion is based on a BSCF for the engine of 6,789 Btu/hp-hr, as listed in site-specific technical data sheet submitted on December 6, 2012. The emission factors have been converted to an HHV basis, using a the following HHV:LHV ratio: 1125/1062.

The construction permit for this engine never required stack testing; the Operating Permit will require quarterly portable monitoring to confirm that engine emissions are in compliance with permitted limits.

Pollutant	Construction Permit Emission Factor (g/hp- hr, as listed in the notes to permit holder)	Construction Permit Emission Factor (lb/MMBtu)
NOx	0.7	0.2408
VOC	0.8	0.2752

A CO emission factor of 0.0602 lb/MMBtu will be in used in the operating permit, based on a Subpart ZZZZ requirement of 93% control. Note that the emission factor from the original construction permit was based on 60% control.

3. Monitoring Plan

To ensure proper operation of the control equipment, catalyst inlet temperature shall be monitored daily and catalyst differential pressure shall be monitored monthly. Quarterly portable NOx and CO monitoring is also required.

Since the emission factors for these engines have been converted to units of lbs/MMBtu, semi-annual sampling and analysis of the natural gas burned shall be required to determine the heat content of the gas. Note that since the emission factors have been converted to an HHV basis, the permit will require the higher value heat content of the fuel to be determined. Also, the Division presumes the engine is in compliance with the opacity requirements, in the absence of credible evidence to the contrary, since only natural gas is used as fuel.

4. Compliance Status

The applicant certified compliance with all applicable requirements in the operating permit application. The Division completed a full compliance evaluation for the Pumba Compressor Station on November 15, 2010. Engines CE-03/CE-04 were determined to be in compliance with the requirements of the existing construction permits. However, the catalyst pressure drops for CE-03 were more

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than 2" from baseline during the months of January through May and August of 2008, and the catalyst pressure drops for CE-04 were more than 2" from baseline during the months of January through September of 2008 (as reported to the Division by the applicant in semi-annual compliance reports). The Division issued a warning letter on January 5, 2010. The applicant has reported no deviations for engines CE-03 and CE-04 in subsequent semiannual reports covering the period from January 1, 2009 through December 31, 2010. Therefore, no schedule of compliance will be required in the operating permit. The operating permit requires more frequent testing (portable analyzer) than that required by Subpart ZZZZ (quarterly vs. semi-annually). No other additional requirements for the permit are identified.

D. <u>DU02</u>: One(1) Triethylene glycol (TEG) natural gas dehydration unit (Wells Hall, model 120 MMscfd, Serial Number: 99-1583-1) with a design capacity of 120 MMScf per day. This emission unit is equipped with two (2) Union Pump electric pumps with a design capacity of 15 gallons per minute total. This unit is equipped with a flash tank, reboiler and still vent. Emissions from the still vent are routed to an air-cooled condenser and then to the Vapor Recovery Unit. Emissions from the flash tank are routed to the Vapor Recovery Unit (VRU). AIRS ID 007.

TK01-06: Four (4) 300 bbl fixed roof storage tanks used to store condensate. Two (2) 500 bbl fixed roof storage tanks used to store condensate. Emissions from these tanks are controlled by the VRU system. AIRS ID 010.

1. Applicable Requirements

DU02 and TK01-04 were combined in Construction Permit 03GA0608, which was issued as Initial Approval on December 26, 2003. A modification (Initial Approval) was issued on September 17, 2004 to increase the throughput of the dehydration equipment from 95 to 120 MMscfd. Final Approval was issued on February 28, 2006. A modification (Final Approval) was issued on March 23, 2010, which updated the configuration of the equipment and separated the dehydration unit and the condensate tanks into separate AIRS ID numbers with separate limits. Grand River Gathering submitted an application on August 17, 2012 to modify the construction permit to include two additional tanks (TK-05 and TK-06) and to increase the condensate throughput limit from 36,500 bbl/yr to 57,600 bby/yr. This resulted in a change to permitted VOC limits for the group of tanks from 4.3 tpy to 9.7 tpy. The Division issued this modification as a Final Approval (Issuance 2) on November 1, 2012. Note that as of the issuance date of the permit, Colorado's adoption of Subpart OOOO (which applies to TK-05 and TK-6) was not yet effective, and the construction permit did not include these requirements. Subpart OOOO requirements will be included in the operating permit. **UPDATE**: Grand River Gathering has since requested that the VOC limit for the tank battery be lowered to 4.5 tpy so that Subpart OOOO requirements will no longer apply (see the discussion on Subpart OOOO under Section III. above).

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The dehydrator requirements, the condensate tank requirements and the synthetic minor HAP limits from the construction permit have been separated into three different conditions in Section II of the Operating Permit. The modification associated with the new requested tank limit submitted on November 28, 2012 will be incorporated directly into the operating permit in accordance with the provisions of Regulation No. 3, Part C, Section III.B.7. The following applicable requirements from the Construction Permit have been incorporated into the Operating Permit:

- VOC emissions from DU02 shall not exceed 24.2 tons per year, and VOC emissions from TK01-06 shall not exceed 9.7 tons per year.
 - As per the request submitted on November 28, 2012, the new requested VOC limit for the tank battery is 4.5 tons per year.
- The facility is a synthetic minor source with respect to 40 CFR 63 Subpart HH and shall be limited to less than 10 tpy of each individual HAP and 25 tpy of total HAP from glycol dehydrator process vents and storage vessels as per the major source definition for production field facilities in §63.761. Compliance is monitored by recording annual HAP emissions above deminimis reporting levels from each dehydrator and storage vessel.
 - Currently, the Division establishes synthetic minor HAP sources with limits of 8.0 tons per year individual HAPs and 20.0 tons per year total HAPs, in order to ensure that insignificant activities do not contribute to the exceedance of major source thresholds (facilities with limits higher than 8/20 are required to track and calculate insignificant HAP emissions). Based on Division estimates (see Section IX at the end of this document for emission calculation details), the HAP PTE for the dehydrator and condensate tanks is less than 8/20 tpy; therefore the Operating Permit will include these limits. Note also that Subpart HH has been amended to address all storage vessels, and not only storage vessels with potential for flash emissions.
- Compliance with emission limits for DU0-02 is demonstrated by running GRI GlyCalc model version 4.0 or higher on a monthly basis using the most recent wet gas analysis and recorded operational values (including gas throughput, lean glycol recirculation rate, VRU downtime and other operational values specified in the O&M Plan). Recorded operational values, except for gas throughput, shall be averaged on a monthly basis for input into GRI GlyCalc.
 - Flash tank temperature and pressure will also be included as required monitoring parameters because they are also inputs to the GLYCalc model. VRU downtime hours are monitored in order to calculate actual emissions.
- Compliance with emission limits for TK01-06 shall be monitored by calculating emissions on a monthly basis using the site specific emission factor based on sampling and the monthly condensate throughput.

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Emission calculations for midstream condensate tanks at Title V facilities are to be accomplished on a monthly basis using an appropriate model. The application for modification of Construction Permit 03GA0608 (received August 17, 2012) includes the E&P Tanks model; therefore the operating permit will specify that this model be used to calculate emissions on a monthly basis. The operating permit also includes additional information on the specific sampling and parameter monitoring that is required for use as inputs to the E&P Tanks model.

- DU02 shall be configured such that the still vent vapors are routed to a condenser and then to the Vapor Recovery Unit, and the flash tank vapors are routed to the Vapor Recovery unit. The condensate tanks TK01-06 shall be configured such that vapors are routed to the Vapor Recovery Unit.
- The vapor recovery unit shall be capable of reducing uncontrolled emissions of VOC from the TEG dehydration unit and the condensate tanks to the emission levels listed in Condition 2, above. Operating parameters of the control equipment are identified in the operation and maintenance plan.

Appropriate periodic monitoring/maintenance will be included in the permit to monitor compliance with the emission limitations and the requirements of the operation and maintenance plan.

- Natural gas throughput to DU02 is limited to 43,800 MMscf/year and condensate throughput to TK01-06 is limited to 57,600 bbl/year.
- DU-02 shall be limited to a maximum lean glycol recirculation pump rate as calculated per 40 CFR, Part 63, Subpart HH, §63.764 (d)(2). The owner or operator shall maintain monthly records of the actual lean glycol recirculation rate and make them available to the Division for inspection upon request.

The source is required to monitor the glycol recirculation rate on a daily basis. The Operating Permit will require a monthly average value (also used as an input for the GLYCalc model) to be determined and used to demonstrate compliance with the Subpart HH limit.

Based on the Division's inspection report from November 15, 2010, the dehydrator was exempt from the Subpart HH glycol circulation requirements based on actual benzene emissions. The permit will be written to include both the exemption requirements and the recirculation rate requirements since emissions at maximum permitted limits exceed the exemption thresholds (note that applicability under the rule is based on actual rather than permitted rates).

• This source is subject to the odor requirements of Regulation No. 2. (State only enforceable)

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Regulation No. 2 Odor requirements are addressed in the General Permit Conditions Section (Section IV) in the Operating Permit.

- DU02 is subject to the control requirements of Colorado Regulation No. 7, Section XVII.D (90% control of VOC from dehydrator process vents beginning May 1, 2008) and the general provisions of Colorado Regulation No. 7, Section XVII. State-only enforceable.
- DU02 is subject to the area source requirements of 40 CFR Part 63 Subpart HH (including the optimal glycol recirculation rate requirements of 63.764(d)(2)).

The initial notification for Subpart HH was received by the Division on January 7, 2009. Therefore the initial notification requirement of 63.775(c) is not included as a condition in the permit.

- TK01-06 are subject to Colorado Regulation No. 7, Section XVII.B (General Provisions) and XVII.C (95% control of VOC from condensate storage tanks). State only enforceable.
- The applicant shall follow the operating and maintenance plan(s) and recordkeeping format approved by the Division. Revisions to the O&M plan are subject to Division approval prior to implementation.

The Operating Permit includes monitoring and recordkeeping requirements sufficient to monitor compliance with the permit limits and other regulatory requirements. The following monitoring/recordkeeping requirements were incorporated from the Operating & Maintenance Plans submitted by the source as part of the application for modification to Construction Permit 03GA0608 (received February 2, 2009 for the dehydrator, and August 17, 2012 for the tanks):

TK01-06: Monthly condensate throughput, weekly separator temperature and weekly separator pressure

DU02: Daily lean glycol circulation rate, weekly wet gas inlet temperature, weekly wet gas inlet pressure, monthly volume of gas processed

 D02 – extended wet gas analysis prior to the inlet of the dehydrator is required annually

In accordance with current Division Policy, gas analyses will be required annually, but the frequency may be increased to quarterly if BTEX or n-hexane concentrations exceed those associated with the data submitted on November 28, 2012 (based on an extended gas analysis from a sample dated February 21, 2012). Sampling frequency is allowed to revert to semiannually if 4 subsequent analyses indicate that BTEX and n-Hexane concentrations are at or below the original values, and then to annually after two subsequent semiannual analyses.

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- TK01 06 Site specific sampling including a compositional analysis of the pre-flash pressurized condensate and a sales oil analysis to determine RVP and API gravity is required annually.
- Revised APENs shall be filed in accordance with the requirements of Regulation No. 3, Part A.

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

 The source is subject to Part C of Regulation No. 3 (Operating Permits); an application for the modification to the operating permit to incorporate the provisions of the construction permit is due within one year of commencement of operation.

This operating permit incorporates the requirements of the construction permit, therefore an application for modification is no longer required.

 Prevention of Significant Deterioration requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit limitation.

Facility wide emissions for criteria pollutants are below major stationary source thresholds. Since no actual requirements apply unless certain modifications to the permit conditions for this equipment are made, this condition has not been included in the operating permit.

 MACT HH major stationary source requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit limitation.

HAP emissions from the dehydrator and condensate tanks are limited to below major stationary source thresholds. Since no actual requirements apply unless certain modifications to the permit conditions for this equipment are made, this condition has not been included in the operating permit.

2. Emission Factors

The permit requires that emissions are calculated using process models (GRI GLYCalc for the dehydrator and E&P Tanks for the condensate tanks) using input parameters obtained from monitoring and/or sampling.

3. Monitoring Plan

DU02: Volume of gas processed is monitored on a monthly basis. Other parameters used as inputs in the GLYCalc model are required to be monitored on either a weekly basis (wet gas inlet temperature and pressure, and flash tank temperature and pressure) or daily basis (glycol recirculation rate). These parameters are averaged on a monthly basis for use as model inputs and to

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determine compliance with the Subpart HH recirculation rate limit. As described above, extended gas analyses are required annually, but frequencies may increase if HAP concentrations are above levels submitted with the information submitted on November 28, 2012. Daily gas throughput (a required GLYCalc parameter) is based on monthly monitored gas throughput and days of dehydrator operation. VRU downtime hours and total dehydrator operating hours are monitored daily (and totaled monthly) in order to calculate controlled emissions.

TK01-06: Tank throughput is monitored on a monthly basis. Other parameters used as inputs in the E&P Tanks model are required to be monitored on a weekly basis (separator temperature and pressure) or on an annual basis (compositional sampling of the pre-flash pressurized condensate and sales oil analysis to determine RVP and API gravity). VRU downtime hours are monitored in order to calculate controlled emissions.

VRU: VRU downtime hours are monitored in order to calculate controlled emissions.

4. Compliance Status

The applicant certified compliance with all applicable requirements in the operating permit application. The Division completed a full compliance evaluation for the Pumba Compressor Station on November 15, 2010. The tanks and dehydrator were determined to be in compliance with the requirements of the existing construction permits.

E. FG01: Fugitive Emissions of VOC from Equipment Leaks. AIRS ID 009.

1. Applicable Requirements

FG01 was issued Construction Permit 04GA0352 (Initial Approval) on May 27, 2004. Final Approval was issued on February 8, 2006. Grand River Gathering submitted a request to revise the emission limit on November 28, 2012. This modification will be incorporated directly into the operating permit in accordance with the provisions of Regulation No. 3, Part C, Section III.B.7.

The following applicable requirements from the Construction Permit have been incorporated into the Operating Permit:

- Visible emissions shall not exceed 20% opacity during normal operation of the source, or 30% during startup, process modification or adjustment of control equipment.
 - Visible emission are not expected to occur from fugitive sources of VOC and HAP emissions such as equipment leaks. Therefore this requirement is not included in the operating permit.
- VOC emissions shall not exceed 6.42 tons per year on a rolling (12) month total.

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Based on the modification request submitted on November 28, 2012, the new requested limit for fugitives is 14.2 tons per year VOC.

 Revised APENs shall be filed in accordance with the requirements of Regulation No. 3, Part A.

The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

 The source is subject to Part C of Regulation No. 3 (Operating Permits); an application for the modification to the operating permit to incorporate the provisions of the construction permit is due within one year of commencement of operation.

This operating permit incorporates the requirements of the construction permit, therefore an application for modification is no longer required.

2. Emission Factors

Emission factors are from EPA's Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, Table 2-4. Emissions Factors are in units of kg/hr-component, and are for emissions of Total Organic Carbon and therefore must be adjusted to represent VOC emissions. VOC emissions are calculated assuming 8760 hours per year of operation and based on a component count of each of the equipment types listed in the protocol. Note that the weight fraction of VOC in the gas stream is used to determine the portion of emissions that are VOC from gas components; emission from liquid service components are assumed to be 100% VOC.

3. Monitoring Plan

The extended gas analysis, which is conducted on at least an annual basis as required by conditions included for DU-02, is used to determine VOC fraction of emissions from components in gas service. A component count will be required within one year of initial permit issuance in order to verify that the permitted emission limit is reasonable because changes have occurred at this facility since the previous issuance of the fugitive component construction permit. The facility will be required to maintain a running total of additions/subtractions to the count, and to complete another hard count every five years.

4. Compliance Status

The applicant certified compliance with all applicable requirements in the operating permit application. The Division completed a full compliance evaluation for the Pumba Compressor Station on November 15, 2010. The fugitive emission point was determined to be in compliance with the requirements of the existing construction permits.

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F. LO01: Condensate Truck Loadout. AIRS ID 011.

1. Applicable Requirements

The Operating Permit application identifies the loadout of condensate into trucks as a source of emissions of VOC (3.5 tons per year at a condensate throughput rate of 57,600 bbl per year). This activity is not included in any construction permits for the facility. Note that condensate truck loading equipment was previously exempt from APEN reporting requirements under Regulation No 3 (prior to December 30, 2002). Condensate truck loading equipment is currently exempt from APEN reporting only if it is located at an E&P site and splash fills less than 6,750 bbl/year or submerge fills less than 16,308 bbl/year (Reg No. 3, Part A, II.D.1.I). Although emissions from condensate truck loadout at this facility are less than 5 tons per year of VOC in an attainment area, the activity is not exempt from permitting requirements under Part B (Part B, Section II.D.5 does not allow the exemption once the total facility emissions exceed 5 tons per year VOC). Therefore, the Division is incorporating the applicable requirements for this activity directly into the operating permit as provided for under the provisions of Regulation No. 3, Part C, Section II.B.7. The applicable requirements include:

- VOC emissions shall not exceed 3.5 tons per year. Emissions shall be calculated using the approved emission factor on a rolling 12 month basis.
- Condensate loadout shall not exceed 57,600 bbl per year. The amount of condensate loaded out shall be monitored and recorded at each loadout event, and a rolling 12 month total shall be used to show compliance with the annual limit.

2. Emission Factors

Emission factors are from the loading loss equation in AP-42, Chapter 5.2 (June 2008):

L(lb/1000 gal) = 12.46*S*PSM/T

Where:

S = Saturation Factor = 0.6 for submerged loading, dedicated normal service (AP42 Table 5.2-1, June 2008)

P = True Vapor Pressure = 5.75 psia (AP-42 Table 7.1-2, November 2006)

M = Molecular Weight of Vapors = 35 lb/lb-mol

T = Temperature of bulk liquid loaded = 530 °R (70°F)

L = 2.84 lb/1000 gallons loaded

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3. Monitoring Plan

Monitoring of condensate throughput is required to calculate emissions to determine compliance with the emission limit.

4. Compliance Status

The source submitted an APEN for the activity (received October 14, 2009). Compliance with the applicable requirements will be certified by the owner or operator in the first and subsequent semi-annual monitoring and deviation reports required by this operating permit.

G. BD01 - Compressor and Pipeline Blowdown Activities. AIRS ID 012

1. Applicable Requirements

Grand River Gathering Submitted an APEN for this point on November 16, 2012, requesting an emission limit of 3.9 tons per year, based on a blowdown volume of 1.2 MMscf/year (VOC and HAP fractions of the gas released were based on a wet gas analysis dated Febuary 21, 2012). The operating permit application had previously listed this point as an insignificant activity. The Division is permitting this point directly in the initial issuance of the operating permit in accordance with the provisions of Regulation No. 3, Part C, Section III.B.7. The following requirements apply:

 VOC emission limit of 3.9 tons per year. Compliance is monitored on a rolling 12 month total.

The owner or operator shall monitor and record the number and type of compressor and pipeline blowdown events that occur on a monthly basis. Records of the number and type of events shall be used to calculate emissions. Emissions are calculated based on the amount of gas released during each event, and the VOC content of that gas. The VOC content of the gas shall be based on the most recent extended gas analysis which is conducted on at least an annual basis as required by the conditions associated with dehydrator DU-02.

2. Emission Factors

Emissions for blowdown and events are calculated by determining the volume of natural gas vented for each event, and the most recent gas analysis to establish the VOC content of the gas vented.

3. Monitoring Plan

The owner or operator is required to record the number and type of blowdown activities that occur each month, and to maintain any records of determinations made to establish the volume of gas vented for each type of event.

4. Compliance Status

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This point was listed as an insignificant activity in the operating permit application and has not been included in any previously issued permits; the Division has not included these activities in any previous compliance inspections. Actual emissions were not listed on the APEN received November 16, 2012.

V. Alternative Operating Scenario (AOS)

The current construction permits for the compression engines include the December 10, 2008 alternative operating scenarios for temporary and permanent engine replacement. The Division is including the current version of the engine AOS in the Operating Permit, including an example regulatory applicability report in Appendix G.

VI. Permit Shield

The Operating Permit application does not identify or request any permit shield protections.

VII. Streamlining of Applicable Requirements

No applicable requirements were streamlined out of the permit.

VIII. Insignificant Activities

The source indicated that the following general categories of insignificant activities at this site include: individual gas-fired fuel burning equipment < 5 MMBtu/hr, Chemical storage tanks/containers less than 500 gallons with daily throughput less than 25 gallons, chemical storage areas (closed containers) with total storage capacity less than or equal to 5,000 gallons, Oil production wastewater (produced water tanks) containing less than 1% by volume crude oil, lubricating oil storage tanks less than 40,000 gallon capacity, and emission units with emissions less than APEN de minimis levels. The following list of specific insignificant activities was included in the Title V application:

- Two (2) 1.00 MMBtu/hr natural gas-fired reboiler (DU02 glycol unit)
- 0.25 MMBtu/hr Enertek fuel gas scrubber
- Emergency blow down vent (facility-wide)
- Engine lube oil tanks
- 100 bbl TEG tank
- One (1) 210 bbl produced water tank
- 100 bbl drip tank
- EG tanks (antifreeze)
- Chemical Storage
- Emergency Relief Vent (condensate tanks)

The source provided an estimate of emissions from the produced water tank on December 11, 2012. Based on projected maximum production of 2,538 bbl per year and the emission factors as stated in Colorado PS Memo 09-02 (ver. Feb 8, 2010) Section 3.1, emissions of VOC and non-Criteria reportable pollutants are below APEN reporting thresholds.

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IX. Facility Emissions

POINT			Contro	lled Emis	sions		Uncontrolled Emissions					
	Facility ID	Description	NOx	VOC	Fug VOC	СО	Reportable HAPs	NOx	VOC	Fug VOC	СО	Reportable HAPs
001	CE02	Cat G3608; 2225 hp	16.9	19.3		24.1	5.3	16.9	25.6		60.0	6.6
003	CE01	Cat G3516TALE; 4521hp	36.8	42.1		52.6	10.9	36.8	55.2		131.4	13.7
004	CE03	Cat G3516TALE; 4521hp	36.8	42.1		52.6	3.1	36.8	55.2		131.4	13.7
005	CE04	Cat G3516TALE; 4521hp	36.8	42.1		9.2	3.1	36.8	55.2		131.4	13.7
007	DU02	TEG dehy; 120 MMscfd		24.2			15.0		484.7			299.7
010	TK01-06	Condensate tanks: 4-300 bbl & 2-500 bbl		4.5			0.3		89.5			5.0
009	FG01	Fugitive Equipment leaks			14.2		0.6			14.2		0.6
011	LO01	Truck loadout - 57,600 bbl/yr		3.5			0.0		3.5			0.0
012	BD01	Blowdown Activities		3.9					3.9			
TOTAL			127.3	181.7	14.2	138.5	38.3	127.3	772.8	14.2	454.2	353.0

Notes: HAP emissions shown above are total Reportable HAP emissions (i.e., uncontrolled emissions are greater than de minimis Reg 3, Part A reporting thresholds.

Data Sources:

001 & 003	Uncontrolled emissions of NOx, VOC, CO and formaldehyde are based on manufacturer's specification sheets. Controlled CO and VOC values are based on emission factors listed in the most recent construction permits. Formaldehyde reduction % is assumed to be the same as CO. All other HAPs are calculated using AP-42, Table 3.2-2 (7/2000). Note that emission factors were converted to HHV basis using a ration of HHV:LHV of 1125:1062.
004 & 005	Uncontrolled emissions of NOx, VOC, CO and formaldehyde are based on manufacturer's specification sheets. Controlled VOC values are based on emission factors listed in the most recent construction permits. Controlled CO is based on the 93% reduction requirement from MACT ZZZZ. Formaldehyde reduction % is assumed to be the same as CO. All other HAPs are calculated using AP-42, Table 3.2-2 (7/2000). Note that emission factors were converted to HHV basis using a ration of HHV:LHV of 1125:1062.
010	Tank emissions are based on E&P Tanks and a liquids analysis from a sample taken on February 21, 2012
007	Dehy emissions were originally reported in the Title V application using GRI GlyCalc and are based on an inlet sample from the plant taken on March 8, 2008, and were updated in the information submitted on November 28, 2012
009	Fugitive emissions are calculated using emission factors from EPA-453/R-95-017, Table 2-4, and were updated in the information submitted on November 28, 2012

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011	Loadout emissions are calculated using AP-42, Chapter 5.2.
012	Blowdown emissions are based on volume estimates and were submitted in an application on November 16, 2012.

HAP Emission Details:

Controlled Emissions (lb/year)

POINT	Facility	Form	Acet	Benzene	Acrolein	Toluene	Ethyl	Xylenes	n-	224	MeOH	1.3-	TOTAL	TOTAL
	ID	aldehyde	aldehyde	201120110	7 101010111	. 0.0.0	benzene	71,011.00	Hexane	TMP		Butadiene	(tpy)	REPORTABLE
														(tpy)
001	CE02	8435	1249	66	768	61	6	27	166	37	374	40	5.6	5.3
003	CE01	17298	2707	142	1664	132	13	60	359	81	809	86	11.7	10.9
004	CE03	1589	2707	142	1664	132	13	60	359	81	809	86	3.8	3.1
005	CE04	1589	2707	142	1664	132	13	60	359	81	809	86	3.8	3.1
007	DU02			7281		14653	1140	6206	694				15.0	15.0
010	TK01-6			71.8		128.7	3.9	43.6	303.4	2.7			0.3	0.3
009	FG01			140.0		765.0	50.0	1115.0	650.0				1.36	0.6
011	LO01												0	0.0
012	BD01			47.0		102.0	3.4	54.0	213.0				0.21	0.0
TOTAL		14.5	4.7	4.0	2.9	8.1	0.6	3.8	1.6	0.1	1.4	0.1	41.8	38.3
TOTAL (N	MACT HH S	ources only	<u>')</u>	3.7		7.4	0.6	3.1	0.5				15.2	

Uncontrolled Emissions (lb/year)

POINT	Facility	Form	Acet	Benzene	Acrolein	Toluene	Ethyl	Xylenes	n-	224	MeOH	1,3-	TOTAL	TOTAL
	ID	aldehyde	aldehyde				benzene		Hexane	TMP		Butadiene	(tpy)	REPORTABLE (tpy)
001	CE02	11172	1249	66	768	61	6	27	166	37	374	40	7.0	6.6
003	CE01	22701	2707	142	1664	132	13	60	359	81	809	86	14.4	13.7
004	CE03	22701	2707	142	1664	132	13	60	359	81	809	86	14.4	13.7
005	CE04	22701	2707	142	1664	132	13	60	359	81	809	86	14.4	13.7
007	DU02			145619		293063	22794	124111	13882				299.7	299.7
010	TK01-6			1436		2574	78	872	6068	54			5.5	5.0
009	FG01			140.0		765.0	50.0	1115.0	650.0				1.36	0.6
011	LO01												0	0.0
012	BD01			47.0		102.0	3.4	54.0	213.0				0.21	0.0
TOTAL		39.6	4.7	73.9	2.9	148.5	11.5	63.2	11.0	0.2	1.4	0.1	357.0	353.0
TOTAL (TOTAL (MACT HH Sources only)			73.5		147.8	11.4	62.1	10.0				304.8	

^{*}Total Reportable = all HAPs where uncontrolled emissions > de minimus values

Italic Text: uncontrolled emissions < de minimus

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